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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,698	11/25/2003	Terrance E. Janssen	315.0001 0101	6282
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MUETING, RAASCH & GEBHARDT, P.A. P.O. BOX 581415 MINNEAPOLIS, MN 55458				FORD, JOHN K
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			3753	

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/721,698	JANSSEN, TERRANCE E.
	Examiner John K. Ford	Art Unit 3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 3/14/06 (RCE)  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-39 is/are pending in the application.  
 4a) Of the above claim(s) 10-12, 20-27, 33-35 and 37-39 is/are withdrawn from consideration.  
 5) Claim(s)    is/are allowed.  
 6) Claim(s) 1-9, 13-19, 28-32 and 36 is/are rejected.  
 7) Claim(s)    is/are objected to.  
 8) Claim(s)    are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on    is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No.   .  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date   

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date   .  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other:   .

Applicant's RCE filed March 14, 2006 (including the earlier filed response and declarations of February 14, 2006) has been carefully considered. Applicant's only response to the office action mailed 27 April 2005 remains a now augmented attempt to swear behind JP 2002-30717 (published 31 January 2002) published approximately ten months before applicant filed his provisional application (27 November 2002).

REQUIREMENT FOR DOCUMENTS

Responsive to this office action the Examiner is requiring a copy of the presentation made by applicant November 13, 2002 in declaration Exhibit B-7 (entitled "Using Potable Water in Heat Exchangers") assuming it is public knowledge.

LACK OF CONCEPTION PRIOR TO THE CRITICAL DATE

The revised declarations filed on February 14, 2005 under 37 CFR 1.131 have been considered but are ineffective to overcome the JP 2002-30717 reference. In pertinent part, Mr. Anderson, a patent attorney responsible for representing Mr. Anderson in certain business matters has prepared and signed his own declaration that allegedly shows conception prior to 31 January 2002. Mr. Janssen has also filed a separate declaration.

The evidence submitted is insufficient to establish a conception of the invention prior to the effective date of the JP 2002-30717 reference. While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete disclosure to another. Conception is more than a vague idea of how to solve a problem. The requisite means themselves and their interaction must also be comprehended. See *Mergenthaler v. Scudder*, 1897 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897).

Original 1.131 Declaration

In applicant's earlier declaration in this case applicant submitted only one Exhibit A-1 (alleged to have been prepared in December of 2001) to show conception of the claimed subject matter before the effective date of the reference (January 31, 2002). While an employee (Brian Urlaub, who could presumably corroborate the alleged facts) is mentioned on page 2 of applicant's declaration, no separate declaration is in evidence from him. Each of the claims (i.e. claims 1, 14 and 37) requires that a section of an existing conduit that is in a flooded state be replaced by at least one fluid source conduit that provides for heat exchange between the a fluid flowing through the source conduit and a fluid flowing in a closed loop.

There is no evidence that applicant conceived of an invention supporting claims of this scope prior January 31, 2002 (the date of JP 2002-30717). In fact, it does not appear that applicant conceived of this idea until November 29, 2002 (applicant's

Exhibit B-8) when he first proposed inserting the GFX heat exchanger into municipal water mains in the state of Minnesota). There is no evidence anywhere in Exhibit A-1 that the heat exchanger is being retro-fitted into an existing water main in a flooded state. It could just as well show new construction. It could just as well show a water main that was un-flooded (i.e. only partially filled). Applicant's declaration doesn't even explain any of the disclosed elements in Exhibit A-1 and their correspondence to what is claimed in the claims. For example, the GFX heat exchanger is nothing more than a highly schematic showing leaving the reader to guess at what is being shown. None of the other Exhibits B-1 through B-11 establish conception of the claimed subject matter of the independent claims prior to January 31, 2002. The general requirements of MPEP 715.07 have not been met.

## NEW DECLARATIONS

### A. ANDERSON DECLARATION

Mr. Anderson's declaration (Exhibit A-2) states in paragraph 4, the conclusion that Mr. Janssen's invention had "evolved" into a system "whereby a section of the existing water main would be removed and a heat exchanger would be inserted into a municipal water main...." Where is the evidence to support such a conclusion? Does Mr. Anderson have facts (e.g. notes or a draft patent application) from that time to support the removal of a section of an existing water main and substituting the heat

exchanger? Where is the evidence to support that the water main would be a water main in a "flooded" state? Mr. Anderson's only reference to any factual materials to support his conclusion (i.e. the same drawing (Exhibit A-2, Attachment A) that Mr. Janssen refers to in support of conception prior to the critical date) lacks any hint that an existing water main in a flooded condition would be replaced with a new section of GFX heat exchange piping. Mr. Anderson's declaration, taken alone and in combination with Mr. Janssen's declaration (discussed below) is not sufficient to change the fact that this single drawing (the aforementioned drawing of December 2001) does not disclose this claimed subject matter (retrofitting an existing water main in a flooded condition). Indeed, Mr. Anderson has not explained how he can possibly remember such details without the benefit of any notes or writings (i.e. facts) dating from the time of the alleged conception. If such memoranda exist they must be submitted for consideration.

#### JANSSEN DECLARATION

Mr. Janssen's declaration, Exhibit A-3 makes reference to a 2005 GFX materials. There are several concerns here. First, conception in 2001 is not shown by materials dated in 2005. Second, the GFX heat exchanger, from all of the product literature submitted and from USP 4,619,311, is not used in a flooded condition. Therefore, far from corroborating the alleged conception, the combination of the respective teachings of GFX and the aforementioned drawing of December 2001, would suggest a use in a water main in a non-flooded condition (contrary to the current claims).

Nothing in the factual materials in support of an alleged conception prior to December 2001, discloses a flooded water main and replacement of a pre-existing section of water main with a GFX heat exchanger. Mr. Janssen's allegation that "city water mains are held in a full condition as a result of a pressurized fluid source as described in the above identified patent application" is not always true. If the water main is a gravity type (similar to a typical almost horizontal drain-down waste water pipe), it will not necessarily be "flooded." In fact, the GFX heat exchanger is disclosed for use with non-flooded pipe, suggesting its use in the drawing of December 2001, without any other information on the drawing, would be understood to be in a non-flooded water main. Moreover the attempt to reference a later filed patent application to cure an evidentiary deficiency in the alleged conception prior to January 2002 is unavailing.

Basically, neither the Anderson nor the Janssen declarations do anymore than allege that the aforementioned drawing of December 2001 supports every limitation in the current claims without offering any facts the support that the drawing discloses a flooded water main and replacement of a pre-existing section of water main with a GFX heat exchanger. Their respective declarations state that the drawing supports a flooded water main and replacement of a pre-existing section of water main with a GFX heat exchanger, when in fact it is completely silent on both of these matters. Since neither declarant has offered any other evidence to support their sweeping conclusions on these two issues, the Examiner is constrained to find that the declarations are

inadequate to overcome the JP 2002-30717 reference for a failure to show conception prior to the critical date.

#### LACK OF DILIGENCE AS TO THE INVENTION

Exhibit B-2 (January 15, 2002) "Metropolitan Law Center LTD" does not disclose any diligence as to the claimed invention. It only shows some "central geothermal system" activity. In fact it appears that that some sort of loop system to each lot was contemplated – not what was disclosed in the aforementioned drawing of December 2001.

Exhibit B-3 (May 23, 2002) "Bolin Creek Cohousing" does not disclose any diligence as to the claimed invention. It only shows some generalized "Alternative Energy, geothermal, Wind Generation and Photovoltaics" activity. Nothing corresponds to that system disclosed in the aforementioned drawing of December 2001.

Exhibit B-3 (May 28, 2002) "Bolin Creek Cohousing" does not disclose any diligence as to the claimed invention. It only shows some generalized "Alternative Energy, geothermal, Wind Generation and Photovoltaics and Fuel Cells" activity. Nothing corresponds to that system disclosed in the aforementioned drawing of December 2001.

Exhibit B-4 (Notes/History, 2002). Again no description of anything other than a broad offer to install any of a large number of alternative energy sources. Nothing specific to the system disclosed in the aforementioned drawing of December 2001.

Exhibit B-5 (Notes/History, 2002). Again no description of anything other than a broad offer to install any of a large number of alternative energy sources. Nothing specific to the system disclosed in the aforementioned drawing of December 2001.

Exhibit B-6 (August 29, 2002). Mention of in Subject "Water Main Heat Exchanger" Nothing specific to the system disclosed in the aforementioned drawing of December 2001. No details.

Exhibit B-7 (November 4, 2002). "Using Potable Water in Heat Exchangers" No details. . Nothing specific to the system disclosed in the aforementioned drawing of December 2001.

Exhibit B-8, (Draft, dated November 29, 2002). First specific mention of the system disclosed in the aforementioned drawing of December 2001.

Exhibit B-9, (December 21, 2003). Second specific mention of the system disclosed in the aforementioned drawing of December 2001.

These exhibits at best support conception of the claimed invention as of November 29, 2002 (Exhibit B-8) and do not show any diligence for the approximate year period from alleged conception in December 2001 until late November 2002, because nothing in these supposed acts of diligence appears to be directly related to the invention claimed.

The very first problem in installing one of these heat exchangers in an existing water main would be the fact that it would undoubtedly violate municipal potable water

and health codes. There is nothing to show that this problem even surfaced in applicant's evidentiary materials until November 29, 2002, when applicant requested a "variance" or waiver to permit insertion of the GFX heat exchanger to a water main in Minnesota. This does not demonstrate that applicant was diligent from the period from December 2001 until November 2002.

#### PRIOR ART REJECTIONS

Applicant's election of Group I, claims 1-21 and 28-39, wound pipe of Figs. 1 and 3, closed system using an intermediate fluid and a heat pump is acknowledged. Claims 1-9, 13-19, 28-32 and 36 have been identified as readable on the elected species. Claims 10-12, 20-27, 33-35 and 37-39 are withdrawn from consideration at this time.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 3, 4, 6, 7, 8, 13, 14, 15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Bardenheier (USP 4,782,888) and JP 2002-30717.

Bardenheier teaches a municipal water line 16 with a heat exchanger 14 in thermal contact with the water in the municipal water main 16. The heat exchanger 14 transfers heat to a primary heat transfer liquid (water or water and propylene glycol) circulated in pipe system 11. Individual heat pumps (see col. 6, line 33) can be used to transfer heat from the primary heat transfer liquid to the secondary fluid circulated through pipes 13. This secondary fluid can be FREON (see col. 3 lines 33-40) used to provide heating or cooling to a conditioned space occupied by the user. No details of the actual construction of heat exchanger 14 are disclosed.

Figure 4 of JP '717 discloses a pre-fabricated pipe 2 having a heat exchanger 1 can be inserted into an existing (waste) water pipe 2 (see paragraphs 65 and 76 of the translation describing the installation in Figures 4 and 7, respectively). The heat exchanger 1 transfers heat to a primary heat transfer fluid circulated in pipe 17, which forms a closed circuit. A reversible heat pump 11 provides heating or cooling to load equipment 20.

To have used the pre-fabricated pipe section 2 with heat exchanger tube 1 of JP'717 in place of schematically shown heat exchanger 14 of Bardenheier would have been obvious to avoid the problems disclosed in JP '717, paragraph 6 and 7, incorporated here by reference, and to ease construction as disclosed in JP '717, paragraph 8.

Alternatively, to have used the apparatus of JP 2002-30717 to recover heat from a municipal water supply rather than a waste water source would have been obvious in view of the fact that Bardenheier discloses municipal water "provides an outstanding

source or sink of low grade thermal energy" for reasons stated in col. 4, lines 16-36 of Bardenheier, incorporated here by reference. That is, the prefabricated pipe section 2 of JP '717 would have been simply inserted into a new construction or an existing water main, rather than into a new construction or an existing waste water pipe. The water main installation would obviously require increased provisions to prevent contamination of the potable water in the event of a pipe breach, which is probably why most patents in this field prefer wastewater, however, there are clear reasons taught by Bardenheier for why potable water from the mains might be preferable.

Regarding the claimed monitoring equipment, see element 18 of Bardenheier and regarding the claimed "enclosing" structure see heat insulator 3 and protective cover 4 of JP '717.

Claims 5, 16, 28-31 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art (Bardenheier/JP 2002-30717), as applied to claims 4 and 15 above, and further in view of Fr 2381869 and Sherman.

Fr '869 teaches an enclosure 1 for a water main 5 and a sewer pipe 6 that are essentially of identical construction. A cover 2 is shown that clips into place. To have used such an enclosure to enclose the water main of the prior art would have been obvious to permit easy access for inspection or repair and likewise to have locked it to prevent unauthorized access would have been obvious in view of Sherman.

Claims 9, 19 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied to claims 1, 14 and 28 above, and further in view of Clancy (USP 2,364,130) or JP 88730 (Fig. 3) or JP 9-229574 (Figs. 3-5).

Clancy disclosed a coil 30 of a somewhat flattened cross-section (col. 3, lines 38-42, "so as to increase the area of contact with the sleeve") that it is helically wound around. Essentially the same disclose is found in the referenced figures in the two Japanese publications. To have flattened the cross-section of the heat exchanger tubing wound around the water pipe as shown in the prior art (JP '717) to increase the contact area and, hence, the heat transfer would have been obvious to one of ordinary skill in the art, in view of these three separate teachings of the same.

Claims 1, 2, 3, 4, 6, 7, 8, 13, 14, 15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Bardenheier (USP 4,782,888) and Theil (DE 2930484) and the conceded prior art GFX heat exchanger.

Bardenheier teaches a municipal water line 16 with a heat exchanger 14 in thermal contact with the water in the municipal water main 16. The heat exchanger 14 transfers heat to a primary heat transfer liquid (water or water and propylene glycol) circulated in pipe system 11. Individual heat pumps (see col. 6, line 33) can be used to transfer heat from the primary heat transfer liquid to the secondary fluid circulated through pipes 13. This secondary fluid can be FREON (see col. 3 lines 33-40) used to

provide heating or cooling to a conditioned space occupied by the user. No details of the actual construction of heat exchanger 14 are disclosed.

Figures 1 and 2 of Theil discloses a pre-fabricated pipe 2 having a heat exchanger can be inserted into an existing main drinking water pipe 13. The heat exchanger transfers heat to a primary heat transfer fluid circulated in pipes 3, 4, which forms a closed circuit. A heat pump provides heating or cooling to the house 6.

To have used the pre-fabricated pipe section 2 with heat exchanger of Theil in place of schematically shown heat exchanger 14 of Bardenheier would have been obvious to ease construction. To the extent that it is necessary to support the rejection the conceded prior art GFX heat exchanger shows the details of a heat exchanger coil wrapped around a section of replaceable pipe intended to be inserted into an existing waste water main which would have been obvious to have used to obtain better heat transfer and possibly ease the building code approval process.

Alternatively, to have used the apparatus of Theil to recover heat from a municipal water supply rather than a waste water source would have been obvious in view of the fact that Bardenheier discloses municipal water "provides an outstanding source or sink of low grade thermal energy" for reasons stated in col. 4, lines 16-36 of Bardenheier, incorporated here by reference. That is, the prefabricated pipe section 2 of Theil would have been simply inserted into a new construction or an existing water main, rather than into a new construction or an existing waste pipe. The water main installation would obviously require increased provisions to prevent contamination of the potable water in the event of a pipe breach, which is probably why most patents in this

field prefer wastewater, however, there are clear reasons taught by Bardenheier for why potable water from the mains might be preferable. To the extent that it is necessary to support the rejection the conceded prior art GFX heat exchanger shows the details of a heat exchanger coil wrapped around a section of replaceable pipe intended to be inserted into an existing waste water main which would have been obvious to have used to obtain better heat transfer and possibly ease the building code approval process.

Regarding the claimed monitoring equipment, see element 18 of Bardenheier and regarding the claimed “enclosing” structure, this appears to be shown in Figure 2 of Theil.

Claims 5, 16, 28-31 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art (Bardenheier/Theil/GFX), as applied to claims 4 and 15 above, and further in view of Fr 2381869 and Sherman.

Fr '869 teaches an enclosure 1 for a water main 5 and a sewer pipe 6 that are essentially of identical construction. A cover 2 is shown that clips into place. To have used such an enclosure to enclose the water main of the prior art would have been obvious to permit easy access for inspection or repair and likewise to have locked it to prevent unauthorized access would have been obvious in view of Sherman.

Claims 9, 19 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art (Bardenheier/Theil/GFX), as applied to claims 1, 14 and 28 above, and further in view of Clancy (USP 2,364,130) or JP 88730 (Fig. 3) or JP 9-229574 (Figs. 3-5).

Clancy disclosed a coil 30 of a somewhat flattened cross-section (col. 3, lines 38-42, "so as to increase the area of contact with the sleeve") that it is helically wound around. Essentially the same disclose is found in the referenced figures in the two Japanese publications. To have used a pipe with a flattened the cross-section of the heat exchanger tubing wound around the water pipe in the prior art to increase the contact area and, hence, the heat transfer would have been obvious to one of ordinary skill in the art, in view of these three separate teachings of the same.

Claims 1, 2, 3, 4, 6, 7, 8, 13, 14, 15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Bardenheier (USP 4,782,888) and Kneer (DE 3139564) and the conceded prior art GFX heat exchanger.

Bardenheier teaches a municipal water line 16 with a heat exchanger 14 in thermal contact with the water in the municipal water main 16. The heat exchanger 14 transfers heat to a primary heat transfer liquid (water or water and propylene glycol) circulated in pipe system 11. Individual heat pumps (see col. 6, line 33) can be used to transfer heat from the primary heat transfer liquid to the secondary fluid circulated

through pipes 13. This secondary fluid can be FREON (see col. 3 lines 33-40) used to provide heating or cooling to a conditioned space occupied by the user. No details of the actual construction of heat exchanger 14 are disclosed.

Figures 2 and 3 of Kneer disclose two different pre-fabricated pipes, each having a heat exchanger, which can be inserted into an existing municipal (waste) water pipe. The heat exchanger transfers heat to a primary heat transfer fluid circulated in pipe system 19, which forms a closed circuit. A heat pump 15 provides heating or cooling to load equipment 8.

To have used the pre-fabricated pipe section of either of Figures 2 or 3 of Kneer in place of schematically shown heat exchanger 14 of Bardenheier would have been obvious to ease construction. To the extent that it is necessary to support the rejection the conceded prior art GFX heat exchanger shows the details of a heat exchanger coil wrapped around a section of replaceable pipe intended to be inserted into an existing waste water main which would have been obvious to have used to obtain better heat transfer and possibly ease the building code approval process.

Alternatively, to have used the heat pump system of Kneer to recover heat from a municipal water supply pipe rather than municipal waste water pipe would have been obvious in view of the fact that Bardenheier discloses municipal supply water "provides an outstanding source or sink of low grade thermal energy" for reasons stated in col. 4, lines 16-36 of Bardenheier, incorporated here by reference. That is, the pre-fabricated pipe section of either of Figures 2 or 3 of Kneer would have been simply inserted into a

new construction or an existing water main, rather than into a new construction or an existing waste water pipe. The water main installation would obviously require increased provisions to prevent contamination of the potable water in the event of a pipe breach, which is probably why most patents in this field prefer wastewater, however, there are clear reasons taught by Bardenheier for why potable water from the mains might be preferable. To the extent that it is necessary to support the rejection the conceded prior art GFX heat exchanger shows the details of a heat exchanger coil wrapped around a section of replaceable pipe intended to be inserted into an existing waste water main which would have been obvious to have used to obtain better heat transfer and possibly ease the building code approval process.

Regarding the claimed monitoring equipment, see element 18 of Bardenheier and regarding the claimed “enclosing” structure, this appears to be shown in either of Figures 2 or 3 of Kneer.

Claims 5, 16, 28-31 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art (Bardenheier/Kneer/GFX), as applied to claims 4 and 15 above, and further in view of Fr 2381869 and Sherman.

Fr '869 teaches an enclosure 1 for a water main 5 and a sewer pipe 6 that are essentially of identical construction. A cover 2 is shown that clips into place. To have used such an enclosure to enclose the water main of the prior art would have been

obvious to permit easy access for inspection or repair and likewise to have locked it to prevent unauthorized access would have been obvious in view of Sherman.

Claims 9, 19 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art (Bardenheier/Kneer/GFX), as applied to claims 1, 14 and 28 above, and further in view of Clancy (USP 2,364,130) or JP 88730 (Fig. 3) or JP 9-229574 (Figs. 3-5).

Clancy disclosed a coil 30 of a somewhat flattened cross-section (col. 3, lines 38-42, "so as to increase the area of contact with the sleeve") that it is helically wound around. Essentially the same disclosure is found in the referenced figures in the two Japanese publications. To have used a pipe with a flattened the cross-section of the heat exchanger tubing wound around the water pipe in the prior art to increase the contact area and, hence, the heat transfer would have been obvious to one of ordinary skill in the art, in view of these three separate teachings of the same.

Any inquiry concerning this communication should be directed to John K. Ford at telephone number 571-272-4911.



John K. Ford  
Primary Examiner